Prior to the use of nondestructive method of examination by the above procedure, it shall be demonstrated by the user, in the presence of a marine inspector on specimens similar to those to be examined, that consistent results, having an accuracy of plus or minus 3 percent, can be obtained.

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9979, June 17, 1970]

§ 56.80–10 Forming (reproduces 129.2).

(a) Piping components may be formed (swaging, lapping, or upsetting of pipe ends, extrusion of necks, etc.) by any suitable hot or cold working method, providing such processes result in formed surfaces which are uniform and free of cracks or other defects, as determined by methods of inspection specified in the design.

§ 56.80–15 Heat treatment of bends and formed components.

(a) *(Reproduces 129.3.1.)* Carbon steel piping which has been heated to at least 1,650 °F. for bending or other forming operations shall require no subsequent heat treatment.

(b) Ferritic alloy steel piping which has been heated for bending or other forming operations shall receive a stress relieving treatment, a full anneal, or a normalize and temper treatment, as specified by the design specification before welding.

(c) *(Reproduces 129.3.3.)* Cold bending and forming of carbon steel having a wall thickness of three-fourths of an inch and heavier, and all ferritic alloy pipe in nominal pipe sizes of 4 inches and larger, or ½-inch wall thickness or heavier, shall require a stress relieving treatment.

(d) *(Reproduces 129.3.4.)* Cold bending of carbon and ferritic alloy steel pipe in sizes and wall thicknesses less than specified in 129.3.3 of ANSI–B31.1 may be used without a postheat treatment.

(e) *(Reproduces 129.3.5.)* For other materials the heat treatment of bends and formed components shall be such as to insure pipe properties that are consistent with the original pipe specification.

(f) All scale shall be removed from heat treated pipe prior to installation.

(g) *(Reproduces 129.3.6.)* Austenitic stainless steel pipe that has been heated for bending or other forming may be used in the ''as-bent'' condition unless the design specification requires post bending heat treatment.

[CGFR 68–62, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9979, June 17, 1970; CGD 73–254, 40 FR 40166, Sept. 2, 1975]

Subpart 56.85—Heat Treatment of Welds

§ 56.85–5 Heating and cooling method (reproduces 131.1).

(a) Heat treatment may be accomplished by a suitable heating method which will provide the desired heating and cooling rates, the required metal temperature, metal temperature uniformity, and temperature control.

§ 56.85–10 Preheating.

(a) The minimum preheat temperatures listed in Table 56.85–10 for P-number materials groupings are mandatory minimum pre-heat temperatures. Preheat is required for Class I, I–L, I–N, II–N and II–L piping when the ambient temperature is below 50 °F.

(b) *(Modifies 131.2.2.)* When welding dissimilar materials the minimum preheat temperature may not be lower than the highest temperature listed in Table 56.85–10 for any of the materials to be welded or the temperature established in the qualified welding procedure.

(c) *(Reproduces 131.2.3.)* The preheat temperature shall be checked by use of temperature-indicating crayons, thermocouples, pyrometers, or other suitable methods to assure that the required preheat temperature is obtained prior to and uniformly maintained during the welding operation.